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*Suaeda neuquenensis* (Chenopodiaceae), a New Species  
from Argentina

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**ABSTRACT.** *Suaeda neuquenensis*, a new species of *Suaeda* (Chenopodiaceae), is described from Añelo's Bowl near Añelo, Neuquén Province, Argentina. It differs from other perennial Argentinean species in being a decumbent shrub with creeping stems that root at the lower nodes bearing short, oblong, often reflexed leaves and a large seed.

**Key words:** Argentina, Chenopodiaceae, Neuquén, *Suaeda*.

Two perennial species of *Suaeda* Forsskål ex J. F. Gmelin (Chenopodiaceae), *S. divaricata* Moquin-Tandon and *S. argentinensis* Soriano, are currently known from Argentina (Soriano, 1942; Giusti, 1997). *Suaeda fruticosa* (L.) Forsskål was reported from the Boca district of Buenos Aires by Soriano (1945), who nonetheless suggested it was a recent introduction and not likely to persist; there is now no evidence that it did. Species of the genus are highly variable as to succulence, habit, and size of leaves (Morello, 1958; Hopkins & Blackwell, 1977; Bassett & Crompton, 1977; Pedrol & Castroviejo, 1988). Other features are more constant: herbaceous versus woody habit, type of inflorescence (including the density of the glomerules), relationship of leaf length and internode length, shape of the calyx, stigma shape and length, and seed size (Hopkins & Blackwell, 1977; Pedrol & Castroviejo, 1988).

**MATERIAL AND METHODS**

Dried specimens of *Suaeda* at ARC, CORD, and MERL were studied, as well as fresh material collected in the Neuquén Province.

Taxonomic and nomenclatural treatments follow Standley (1916), Morello (1958), Bassett and Crompton (1977), Hopkins and Blackwell (1977), Correa (1984), Pedrol and Castroviejo (1988), Teiller (1996), Guisti (1997), Greuter et al. (2000), and Schenk and Ferren (2000, 2001). Herbarium sheets of *Suaeda neuquenensis* are conserved at ABH of the University of Alicante (Holmgren & Holmgren, 1993).

**RESULTS AND DISCUSSION**

***Suaeda neuquenensis*** M. A. Alonso, Conticello & Cerazo, sp. nov. TYPE: Argentina. Neuquén Province: Añelo's Bowl near Añelo, 38°11'56"S, 69°00'46"W, 350 m.s.m. on saline-sodic soil, 24 Mar. 1998, L. Conticello & M. A. Alonso s.n. (holotype, ABH 41516; isotype, ABH 42972). Figure 1.

Nanophanerophitus in fructibus pulvinatis usque ad 50 cm altitudinis et 2.50 m diametri se extendentibus. Caulis atramineus leviter striatus, glaber cum internodiis 1 mm, interdum inaestimabilis in gemmis recentibus, 2–3 mm longis in ramis adultis. Folia adulta patentia aut reflexa, iuvenilia perpendicularia, alterna oblonga, succulenta cum apice obtuso ac leviter mucronato, parum aut

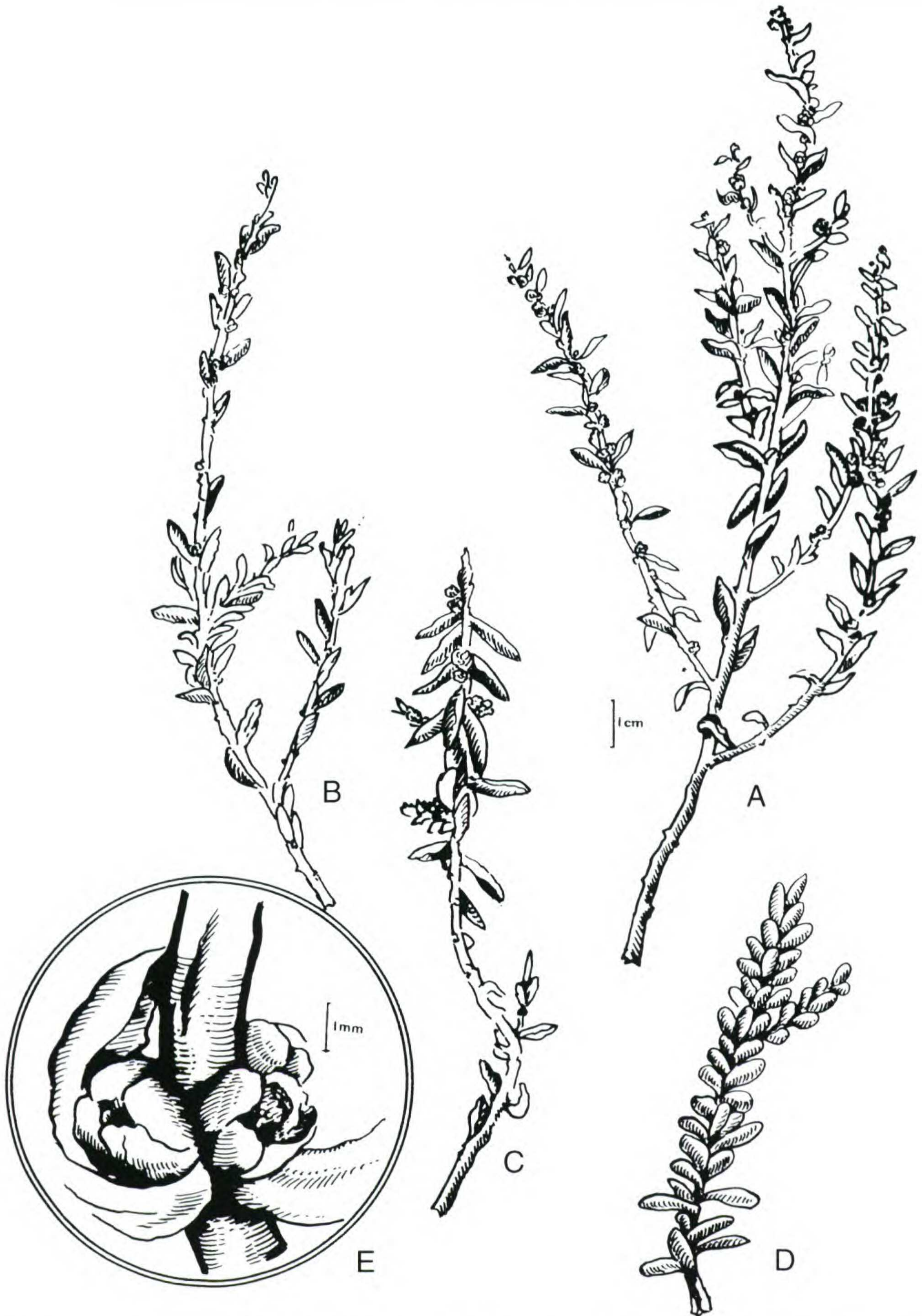


Figure 1. *Suaeda neuquenensis* M. A. Alonso, Conticello & Cerazo. —A. Habit (holotype, ABH 41516). —B, C. Flowering branches. —D. Young sterile shoot. —E. Detail of an axillary floral glomerule from the holotype.

nihil ad basim attenuata, dorsiventraliter compressa, margines integri et rotundi, cum nitore virentia aut glauca vel albescentia propter salina corpuscula quae in superficie deponuntur, 5–15 mm longa et 3–8 mm lata. Gynodioecius, sessiles flores iuncti in glomerulis axillaribus 2–6,

hermaphroditi cum sterili gynaecio, 5 staminibus et calyx 5 sepalorum. Flores feminei cum gynaecio fecundo uniloculari, stylis 3 ad 0.5 mm longis, stigmatibus papillis elongatis atque pilis acutis vestitis. Flores isti minores sunt quam hermaphroditi, sed dia parte eius, et cum apice

abtusos glabris ac inflexis, 2–3 mm longi. Fructus utriculatus, ovoideus, 3 × 4 mm, in calycis segmentis inclusus sed illis non affixus. Semen verticale, nigrum, lenticulare, testa reticulata.

Plants woody, cushion-shaped, dwarf shrubs with creeping stems, forming mats 20–50 cm high and 25 dm across, the decumbent branches rooting at the nodes. Stems light brown, weakly striated, the internodes of new branches 1 mm long or less, 2–3 mm long in mature branches. Leaves alternate and positioned perpendicular on new branches, becoming reflexed on mature branches, succulent, oblong, 5–15 mm long, 3–8 mm wide, entire, shining green to glaucous or white due to saline deposited on the surfaces, the apices obtuse to rounded or slightly mucronate, the bases attenuated. Flowers gynodioecious, axillary, sessile, 2 to 6 per glomerule, the perianth composed of 5 sepaloïd perianth segments, 2–3 mm long, these inflated in the middle, apically obtuse and inflexed, the hermaphrodite flower with 5 stamens and a sessile, sterile gynoecium, the female flowers with a solitary, 1-locular gynoecium with 3 stigmas up to 0.5 mm long, bearing elongate papillae and acute hairs. Fruit an ovoid utricle, 3 × 4 mm, enclosed by the perianth segments, which are not closely attached to it; seeds vertical, black, lens-shaped, reticulate on the testa.

*Ecology.* *Suaeda neuquenensis* is known only from Añelo's Bowl near Añelo in the province of Neuquén, where it occurs on saline-sodic soils in monospecific communities or in association with *Atriplex undulata* (Moquin) Dietrich, *Distichlis spicata* (L.) Greene, *Halophytum ameghinoi* Spegazzini, *Sesuvium portulacastrum* (L.) L., and *Suaeda divaricata*.

#### TAXONOMIC DISCUSSION

In a recent paper on the nomenclature of *Suaeda*, Schrenk and Ferren (2001) stressed features characterizing sections in the genus. According to their arrangement, *Suaeda neuquenensis* belongs to section *Limbogermen* Iljin (sect. *Salsina* Moquin, pro parte), which includes American shrubs and subshrubs, with radial flowers, stigmas from a pit at the top of the ovary, and leaves with suaedoid C<sub>4</sub> anatomy, consisting of a ring of dark green palisade and Kranz cells surrounding internal aqueous tissue, among other characters.

Relationships among taxa of section *Limbogermen* are shown in Table 1. Morphologically, *S. neuquenensis* shows a syndrome of characters that is not found in other South American taxa in the section. Stems are decumbent and root at the basal

nodes, a feature that is absent in both *S. argentinensis* and *S. divaricata*; seeds are vertical and have a reticulate testa (neither horizontal and smooth as in *S. argentinensis*, nor tuberculate as in *S. divaricata*). With regard to other American species, *S. neuquenensis* resembles *S. conferta* (J. K. Small) I. M. Johnston by its delicate cushion-shaped habit, though it differs by its robust, strongly woody stems, large fruits up to 4 × 3 mm (the largest in the section), and its narrower and shorter leaves, among other features. Connections to other Central and North American taxa are very weak.

It is unlikely that *Suaeda neuquenensis* is an exotic, introduced taxon. Its natural habitat is quite far from populated or frequented areas, and the soil in which it grows has a high salt content, making it unsuitable for agriculture. It is difficult therefore to support an alien origin for this plant, since no taxon is currently known to which it could be referred.

#### KEY TO RELATED SPECIES OF *SUAEDA* IN THE ARGENTINE REPUBLIC

The following is part of Giusti's (1997) key for the genus *Suaeda*, to which *S. neuquenensis* has been added.

- 1a. Shrubs or small shrubs.
  - 2a. Plants with ramification in acute angles. Leaves appressed to stem. Flowers in axillary, pedicellate glomerules. Seeds usually horizontal . . . . . *Suaeda argentinensis*
  - 2b. Plants with ramification in divergent angles. Leaves divergent, not appressed to stem. Flowers in axillary, sessile glomerules. Seeds vertical.
    - 3a. Shrubs erect, 1–3 m high. Leaves semicylindric, perpendicular to the stem. Young stems downy. Stems brown to reddish . . . . . *Suaeda divaricata*
    - 3b. Shrubs decumbent, 0.2–0.5 m high. Leaves flat, reflexed on the stem. Young stems glabrous. Stems light brown . . . . . *Suaeda neuquenensis*
- 1b. Annual herbs . . . *Suaeda patagonica*, *Suaeda altissima*, and *Suaeda densiflora*

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Table 1. Comparison of morphological features among the species of *Suaeda* sect. *Limbogermen*.

Features	<i>Suaeda divaricata</i> Moquin-Tandon	<i>Suaeda argentinensis</i> Soriano	<i>Suaeda neuquenensis</i> M. A. Alonso et al.	<i>Suaeda conferta</i> (J. K. Small) I. M. Johnston	<i>Suaeda tampicensis</i> (Standley) Standley	<i>Suaeda taxifolia</i> (Standley) Standley	<i>Suaeda californica</i> S. Watson	<i>Suaeda nigra</i> (Rafinesque) Mcbride	<i>Suaeda palmeri</i> (Standley) Standley	<i>Suaeda foliosa</i> Moquin-Tandon
Habit	erect	erect	decumbent branches rooting at the nodes	prostrate, de- cumbent	erect, decum- bent	erect	decumbent	erect	erect	erect
Height (m)	1–3	0.5–2	0.2–0.5	0.2–1	—	up to 1.5	0.3–0.8	0.2–1.5	—	0.3–0.5
Stem color	brown to red- dish	light brown and striated	light brown and striated	light brown	green	gray-brown	gray-brown	dark red	white tomentu- lose	brown to red- dish
Stem surface	downy	glabrous	glabrous	glabrous	densely tomen- tulose	densely hairy	glabrous	pubescent to tomentose	white tomentu- lose	glabrous
Leaf size (mm)	10–50 × 2–3	25 × 15	5–15 × 3–8	2–10 × 1–2	7–22 × 0.5– 1.5	30 × 0.5–1.5	5–35 × 0.5– 1.5	10–30 × 1–2	3–7 × 1.5–2	3–5 × 10–20
Leaf shape	semicylindri- cal, basally attenuated	semicylindri- cal, not at- tenuated	oblong, only slightly at- tenuated, depressed	oblong, short- petiolate	subsessile, short-petio- late	subcylindrical, subsessile	subcylindrical, subsessile	subcylindrical, sessile or short-petio- late	terete	subcylindrical, subsessile
Leaf surface	sparsely pu- bescent	glabrous	glabrous	glabrous	glabrous	glabrous or pubescent	glabrous	glabrous or pubescent	white tomentu- lose	glabrous
Apex	acute		obtuse to near- ly rounded	rounded	acuminate	acute to acu- minate	acute	obtuse	rounded	acuminate
Number of flow- ers	3–7	3–5	2–6	1–5	1–5	1–3	1–5	1–12	1–2	1–9
Perianth surface	long hairs (1 mm)	glabrous	glabrous	glabrous or pubescent	glabrous	hairy	glabrous	glabrous or pubescent	glabrous	glabrous
Number of stig- mas	3–4	3–4	3	2–3	3	3–4	3	2–3	3	2
Fruit size (mm)	1.5–2 × 1	1.5 × 1.5	4 × 3	2–3	0.8–1	1–3	1.5–2	0.7–2	1.5–2	1.5–2
Seed position	vertical	usually hori- zontal	vertical	horizontal or vertical	horizontal	horizontal or vertical	horizontal or vertical	horizontal or vertical	horizontal	vertical and horizontal
Seed size (mm)	1.5–2 × 1	1.5 × 1.5	4 × 3	0.8 × 1.2	0.8–1	1–2	0.8–1.2	0.5–2	1.5	0.8–2
Surface of testa	tubercled	smooth	reticulate	reticulate	reticulate	smooth	reticulate	reticulate	smooth	smooth

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